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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/847,989	05/03/2001	Takashi Iwamoto	36856.478	5790

7590 12/18/2002

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EXAMINER

CUEVAS, PEDRO J

ART UNIT PAPER NUMBER

2834

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/847,989

Applicant(s)

IWAMOTO ET AL.

Examiner

Pedro J. Cuevas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 October 2002.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,088,462 to Fujimoto et al.

Fujimoto et al. clearly teaches the construction of a Surface Acoustic Wave Device which utilizes a Shear Horizontal wave, comprising:

a piezoelectric substrate (2); and

an interdigital transducer (5) provided on the piezoelectric substrate, the

interdigital transducer including:

at least three metal layers (column 6, lines 43-46) containing at least one

first layer made of a metal with a density of about 15 g/cm<sup>3</sup> or more (Tungsten) as

a major component; and

at least one second layer made of a metal with a density of about  $12 \text{ g/cm}^3$  or less (Aluminum), the volume of said first layer being in the range from about 20% to about 95% of the total volume of the interdigital transducer (column , lines 49-54).

3. With regards to claim 7, Fujimoto et al. disclose the first layer is arranged at the surface of the interdigital transducer as shown in Figure 1A.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-6 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,088,462 to Fujimoto et al. in view of common knowledge in the art.

Fujimoto et al. discloses the claimed invention except for the transducer contains at least two of the first layers.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use two first layers in the construction of the transducer, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. St. Regis Paper Co. v. Bemis Co., 193 USPQ 8.

6. With regards to claim 3 and 4, it would have been obvious to one having ordinary skill in the art at the time the invention was made to:

make the first layer using a metal with a density of at least about  $15 \text{ g/cm}^3$  having as a major component is one of Au, W, Ta, and Pt; and

make the second layer using a metal with a density of up to about  $12 \text{ g/cm}^3$  having as a major component is one of Ni, Cr, Cu, Al, and Ti;

since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice.

In re Leshin, 125 USPQ 416.

7. With regards to claim 5, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the layers that are within a range of thickness of up to approximately one-fourth of the total thickness of the interdigital transducer measured from the surface of the piezoelectric substrate of the metal layers constituting the interdigital transducer, the first layer has a volume of at least 50% of the total volume, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

8. With regards to claim 6, it would have been obvious to one having ordinary skill in the art at the time the invention was made to in the layers each having a thickness of at least about one-twentieth of the total thickness of the interdigital transducer in the metal layers constituting the interdigital transducer, the layer located nearest to the piezoelectric substrate is the first layer, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

9. With regards to claim 8, it would have been obvious to one having ordinary skill in the art at the time the invention was made to in the interdigital transducer, the layer containing Au as

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a major component has a volume of from about 40% to about 80 % of the overall volume, and the layer containing Ni as a major component has a volume of from about 20% to about 60% of the overall volume, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

10. With regards to claim 9, it would have been obvious to one having ordinary skill in the art at the time the invention was made to in the interdigital transducer, the layer containing Au as a major component has a volume of from about 20% to about 50% of the overall volume, and the layer containing Al as a major component has a volume of from about 50% to about 80% of the overall volume, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

11. Claims 10-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,088,462 to Fujimoto et al. in view of U.S. Patent No. 4,425,554 to Morishita et al.

Fujimoto et al. disclose the construction of a Surface Acoustic Wave Device, which utilizes a Shear Horizontal wave as described above.

However, it fails to disclose reflectors arranged on both of the sides of the IDT.

Morishita et al. teach the construction of a Surface Acoustic Wave Resonator Device having reflectors (18 and 20) arranged on both of the sides of the IDT for the purpose of at least partially reflect the waves generated by the transducer (12).

It would have been obvious to one skilled in the art at the time the invention was made to use the reflectors disclosed by Morishita et al. on the Surface Acoustic Wave Device disclosed

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by Fujimoto et al. for the purpose of at least partially reflect the waves generated by the transducer.

12. With regards to claim 11 and 12, Morishita et al. disclose:

the reflectors are grating type reflectors, and have the configuration in which the plurality of electrode portions, each are short-circuited in both of the ends thereof; and the portions of the IDT where the reflectors are located having a propagation constant that is different from that of the remaining portion of the IDT.

13. With regards to claim 14, Fujimoto et al. disclose the IDT having a four-layer structure (column 6, lines 43-46).

14. Claims 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,088,462 to Fujimoto et al. in view of U.S. Patent No. 4,425,554 to Morishita et al. as applied to claims 10-12 above, and further in view of common knowledge in the art.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to build:

the first layer includes a Ti film and the second layer includes an Au film; and the four layer structure of the IDT includes films of Ti, Au, Ni, and Au;

since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

#### ***Response to Arguments***

15. Applicant's arguments filed October 25, 2002 have been fully considered but they are not persuasive.

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16. Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

17. In response to applicant's argument that the prior art fails to disclose the range of volume of the first layer of the interdigital transducer, it must be noted that it would have been obvious to one having ordinary skill in the art at the time the invention was made to set the volume of the first layer in the range from about 20% to about 95% of the total volume of the interdigital transducer, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

#### ***Conclusion***

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,



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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pedro J. Cuevas whose telephone number is (703) 308-4904. The examiner can normally be reached on M-F from 8:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor R. Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-1341 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Pedro J. Cuevas  
December 12, 2002



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